

AN ILLUMINATION SYSTEM AND METHOD FOR EFFICIENTLY
ILLUMINATING A PATTERN GENERATOR

ABSTRACT OF THE DISCLOSURE

An illumination method and system use a light source and illumination optics to illuminate a pattern generator. The illumination optics can include at least two devices. For example, if first and second diffractive and/or refractive devices are used, one can be a pupil defining element (PDE) and one can be a field defining element (FDE). In another example, a third diffractive or refractive element can be used to make light entering the illumination system uniform. When only two are used, the PDE forms one or more light beams having a defined profile. The FDE directs the one or more light beams having the defined profile, such that each directed beam substantially corresponds in size and shape to a desired illumination area(s) on the pattern generator. The directed beams are directed to impinge substantially only on the desired illumination area(s). Thus, using the PDE and the FDE increases optical efficiency of light impinging on the pattern generator and substantially reduces or eliminates stray light caused by light impinging on undesired areas of the pattern generator.

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